

**METHOD OF MAKING A SPIN VALVE SENSOR WITH A  
CONTROLLED FERROMAGNETIC COUPLING FIELD**

**ABSTRACT OF THE DISCLOSURE**

5       A pinned layer structure of a spin valve sensor is formed by sputter deposition of cobalt iron (CoFe) in a nitrogen ( $N_2$ ) atmosphere. This method permits a wider range of deposition times of a copper spacer layer to achieve a desirable ferromagnetic coupling field ( $H_F$ ) between the pinned layer structure and a free layer structure in the spin valve sensor.